

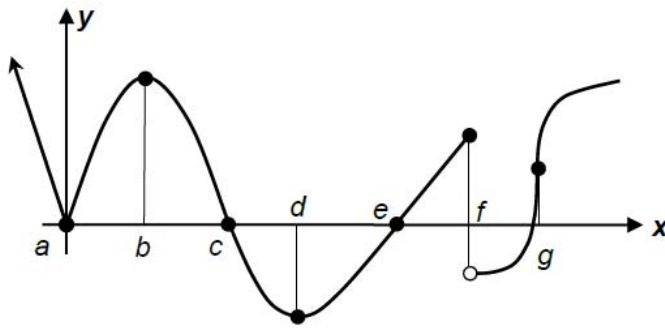
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Review for Q1 Exam 2

Do Now:

Find the derivative:  $g(x) = (\sin x)(4\sqrt{x})$

1. Use the graph below to determine all  $x$ -values where the function is **not** differentiable.



2. Find the  $x$ -coordinates of all points on the graph of  $y = x^3 - 5x^2 - 8x + 9$  at which the tangent line is horizontal.

3. Use the limit definition of a derivative to calculate the derivative of  $f(x) = 5 - 2x^2$

4. Find an equation of the tangent line to the graph of the function  $y = 5x^2 - 3x$  when  $x = -1$

5. Find  $h'(x)$  when  $h(x) = 4\sqrt{x} + 5 \cos x$

6. Find the  $h'(x)$  if  $h(x) = (\cos(x))(3x^3 - x^2 + 10x + 2)$ .

7. Use the following table to find  $y'$  at  $x = 1$ , if:

<b>f(1)</b>	<b>f' (1)</b>	<b>g(1)</b>	<b>g' (1)</b>
3	4	1	-2

$$y = f(x)g(x)$$

8. Find the coordinates of the point(s) where  $f(x) = \frac{1}{4}x^4 - \frac{1}{3}x^3 - x^2$  has horizontal tangents.

9. Find  $f'(x)$  if  $f(x) = 3x^2 \sin x$

Find the equation of the tangent line to the function at the given x-value for each of the following:

10)  $f(x) = x^2 + 8x + 16$  when  $x = -2$

11)  $f(x) = 3x^2 - 4x + 2$  when  $x = 2$

12)  $f(x) = (3x - 5)(x^2 + 9x)$  when  $x = 1$

13)  $f(x) = \sqrt{3x - 3}$  when  $x = 4$  (Use the limit definition)

